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AUTHOR Pucinski, Roman
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ABSTRACT

A primary rationale presented for the continuance of vocational research and development is that major technological changes will require the development of curriculum programs to meet the changing needs of industry as new job skills continue to emerge. Additional factors that challenge vocational research are the development of marketable skills for all high school students whether or not they plan to continue their education; retraining of the unemployed; the provision of opportunities for women, the disadvantaged, and handicapped; effective guidance and counseling programs; and the development of statewide management information systems. (RG)

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VOCATIONAL RESEARCH AND DEVELOPMENT:

Key to Survival in America's Third Century

By Roman Pucinski

Vocational Education must provide a delivery system for the prepration of job skills -- whether secretary or scientist -- in the wake of enormous technological changes which face America as we enter our third century.

Since Smith-Hughs, vocational education has been an alternative in the milieu of American education. But as America reaches for a two trillion dollar economy by 1980 -- give or take a year or two -- and as American industry feels the pressures of new competition from industrially emerging nations throughout the world, vocational education will become an imperative for survival.

No one is suggesting that we diminish or de-emphasize the verbal skills or humanities. The ability to communicate is fundamental. Nor can anyone deny the importance of the humanities: they are the lifeline for understanding among free people. But America is rapidly losing the technical superiority that has been the basis of our prosperity and our proudest export. The ideal, then, would be to mesh the two, verbal and technical skills, to provide the highest educational goals in the world.

The National Advisory Council on Vocational Education recently suggested to the President that America will never again be particularly rich in natural resources. However, we have always been rich in skill: our competitive position in world markets was built on the superb technical

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skills and productivity of our people. We are in danger of losing that edge. We must reclaim it as America moves into her third century.

The key is a major reshaping of our educational system so that every American youngster -- male and female -- will graduate with a marketable skill. Vocational research and development must provide the main thrust for this reshaping.

If it has to be a shotgun marriage, so be it. But vocational training must become an integral part of our education concept if we are to stop the insidious practice of mis-educating at least half of our young people.

Parts C and D -- as well as Part I -- were written into the 1968 Vocational Education Amendments with strong hope by Congress that vocational education research and development would start providing answers to our educational needs. A recent study by the National Advisory Council on Vocational Education shows that the states are indeed engaged in an array of exciting research and development projects. But much more needs to be done.

Congress hopes this research will provide the answers to mis-education, which works terrible hardships on individuals affected by it. Some experts insist that we are persistently mis-educating at least half of our young people. The negative correlation between school enrollment and probable job opportunities has become a familiar subject in the press. It is clear that our schools are not providing training in the skills needed in the job markets that exist today, but so far we have been unable to match the "supply" of potential employees with the "demand" of the employers. Research will provide the key to the equation.

Public concern has been greatly influenced by the economic crisis facing the world. What was tolerable in prosperity has become absolutely

intolerable in the face of economic uncertainty. We in America are faced with the unprecedented phenomenon of having 9 per cent of our labor force unemployed and at the same time facing actual shortages in skilled manpower.

This paradox should be sufficient proof that many of those unemployed will never go back to their old jobs. The vocational education research and development community must not only tell us why the return to former employment is unlikely -- so that we can learn to predict the changing employment markets, and so that we can better prepare our students for flexibility in job skills -- but the vocational education research must also tell us what needs to be done to retrain the unemployed. The burden of retraining layed-off workers, as well as providing the initial training for those just entering the job market, will increase the pressures on the vocational education community. Clearly those pressures will only be alleviated by a sound commitment to adequate research now to prevent chaos in the future.

The challenge to vocational research and development boggles the imagination.

In the decade of the 70's alone, 5,000 new job skills will emerge as absolutely necessary for our economic survival. Vocational research and development -- as well as curriculum development -- will have to meet the challenges these newly emerging job skills provide.

Vocational researchers must be bold and stout of heart for there continue to be those who never did and never will understand fully the role of research.

It is not uncommon to hear those who would try to mollify their constituents charge that too much money is being spent on research, that there is wasteful duplication in research, or that too much emphasis is being placed on research, etc. etc.

Critics of research become quite stormy behind a smoke screen of "economy." And when they don't know where else to cut -- research becomes the sacrificial lamb.

Researchers who, themselves, put pedantic titles on their work don't help matters any.

I recall a number of years ago, a violent debate in the House over economy. One member triumphantly moved to strike a $75,000 appropriation for the "Establishment of a Baboon Colony in America." He had a field day ridiculing the proposal and he charged that spending that kind of money on a baboon colony was the ultimate in waste in government.

As it developed, the National Science Foundation wanted the project funded because the baboon has a bone structure and nervous system most closely resembling that of human beings. Since it was impossible to import baboons because of the war, NSF wanted to create its own supply in America. Without the flow of baboons for their lab studies, the nation's hospitals and medical schools would be faced with a serious crisis in medical education. There just aren't enough human cadavers to meet the research needs of our medical schools. The appropriation was approved, but not without a fight.

Fortunately, there are those who understand the need for on-going research. This is why NACVE -- in its testimony to Congress -- asked for continuing Parts C and D, as well as I.

Vocational research will be faced with additional responsibilities as the nation begins to implement the 1972 Presidential Commission on Education Recommendation which urged that general education courses be "buried" and that vocational education be placed on parity with college preparation.

The word "buried" is the Commission's -- not the author's.

The Commission quite properly urged a greater emphasis on vocational education to make American education more meaningful.

My own conclusion is that all students -- those going on to college or community college as well as those who plan to enter the job market immediately -- should have vocational education as an integral component of their secondary education. There are very few young people left in America whose parents can afford to pay for the entire college course. With few exceptions -- very few -- almost all college students must spend some of their time in part time employment to help meet the cost of higher education.

It just makes plain good sense to me to have the college-bound student develop some marketable skill in high school so he or she can obtain better paying employment while in college and have more time for studies.

There is an even more compelling argument for some form of vocational education for the college-bound student. While it is true that 55 per cent of our high school students go on to college, only 20 per cent actually survive to get a degree. The remaining 80 per cent of college drop-outs may well constitute the most serious social problem in America today. For they have been carefully guided through 12 years of college preparation without any exposure to the world of work. When they drop out, they are to a great extent almost totally oblivious of any job preparation.

Vocational research and development must seek formulas to meet this problem.

Its task will be even more intensified as the present emphasis on career exploration -- some call it career education -- takes hold throughout the American educational community. No single phenomenon has captured the imagination of educators and communities as the new emphasis on career exploration at all age levels. It would be cruel to whet the appetite of young people with career exploration and then fail to provide a delivery system of

vocational education -- both at the secondary and/or post-secondary levels -- to fulfill the expectations of career decisions.

It is important to draw the proper distinction between career exploration and vocational education. In too many areas, supporters of career exploration honestly believe it is vocational education. That is why we are urging that the term "career education" be dropped, and that it be substituted with "career exploration."

Any effort at developing career exploration without a vocational component is doomed to fail. But failure by the vocational education community to develop modern curricula to meet the changing needs of American industry as reflected in career exploration will be equally devastating on the nation's educational system.

That's why vocational research and development -- as well as curriculum development -- hold the key to progress and survival.

Development of area vocational centers will give educators a greater degree of freedom in developing new curriculum programs to meet the changing needs of industry. They will provide skills for the 45 per cent of American high school students who for various reasons do not go on to college. Those who argue that all vocational education should be shifted to post-secondary schools ignore the fact that 45 per cent of our young people do not go on to post-secondary schools. The research community will have to find a middle ground for this problem.

In the changing challenge to vocational education, perhaps the cluster approach to curriculum development offers a new dimension of selectivity for training young people for the world of work. Dean Elizabeth Simpson, while still the Chief of the Curriculum Development Branch, USOE, initiated curriculum development in 15 occupational clusters identified for vocational and technical education. Much of this curriculum material is now on the line and available.

The vocational research and development community should place a high priority on resolving any problems which come up in connection with the 15 cluster approach. Indeed, in the rapidly changing needs of American industry, the cluster approach may be the most logical approach for vocational educators.

The cluster approach appears to maximize opportunities for people to be trained in any one of the 15 basic industrial or occupational disciplines and then to get the finishing touches within the chosen discipline as the need arises.

This approach makes sense when we look at the new approach of American industry to tackle major assignments. In the immediate future, many American companies will no longer build large factories and use them for changing missions. Instead, they will use the task force approach. They will assemble a task force of workers educated in certain disciplines and proceed with the task at a site most suitable for the assignment. When the job is completed, they will dissolve the task force and proceed to the next assignment.

This is why it can now be safely predicted that the average American worker will change his or her job skill anywhere from five to nine times in a working lifetime. Education itself will be an on-going life-time process.

That is why Dean Simpson's proposal for establishing the home as a learning center takes on special significance and offers the vocational education research and development community a new range of challenges and opportunities.

With the use of tape cassettes, video tapes, closed circuit TV and all the other electronic software now available, the home learning center will help supplement classroom instruction for the total educational experience.

As the nation moves to its two trillion dollar economy, the 15 clusters defined by OE take on special significance, for indeed, it is within these 15 disciplines that the nation's greatest economic change will occur.

Agribusiness and natural resources will continue to be America's biggest employers as world markets continue to open for American farm products.

Business and office occupations will take on new meaning as the nation surges to its two trillion dollar economy. The same holds true for Communication and Media; Construction; Consumer and Homemaking; Environment; Fine Arts & Humanities; Health; Home Economics; Hospitality and Recreation; Manufacturing; Marine Sciences; Marketing and Distribution; Personal Services; Public Service; Transportation; and General Career Exploration.

Nowhere in the vocational field will the researcher find greater challenges than in home economics as the nation moves to new levels of growth. Educators will have to develop courses in home ec which will prepare women for the dual role of homemaker and breadwinner at the same time -- and young men to share in homemaking responsibility.

The 1970 census shows 53 per cent of America's population are women and 47 per cent men. This spread is expected to grow to 55 per cent women in 1980 and 45 per cent men. It means that industry will have to make work so attractive to women that they will be willing to accept the dual role of breadwinner and homemaker at the same time.

Industry will have no choice as we surge into our third century.

Women entering the work force are exceeding male workers by substantial numbers. The increase of men in the labor force went from 43.6 million in 1953

to 54 million in 1973 or roughly an increase of 10 million. The increase of women in the labor force jumped by 15 million in the same period, from 19.4 million women workers in 1953 to 34.6 million in 1973.

Today, women constitute 40 per cent of the entire work force in America as compared to 31 per cent in 1953. At the present rate of growth, we fully expect women to outnumber men in the labor force by 1990 in the United States.

Home economics will need all the help it can get from research and development, for homemaking itself is becoming increasingly more complex. We recently did a study on what it would cost the average household of four -- the husband, wife and two children -- to purchase on the open market at minimum wage with no overtime, the services the average homemaker provides for her family daily. The figure totaled $15,700 annually. Its significance is that it illustrates how increasingly complex homemaking has become at a time when women are being lured into the world of work.

Equally important, women needs the jobs. They are entering the labor force in droves. Fully 59 per cent of all single women age 20 to 24 -- the prime child bearing ages -- are working or looking for work. The same is true for 50 per cent of the married women in the same age bracket.

Belief that the big increase in women in the work force is an offshoot of the womens' liberation movement is belied by statistics. Nor are they working for "mad money." Necessity is the chief reason. Nearly 2/3 of all women workers are single, divorced, widowed, or have husbands earning less than $7,000 a year. They are becoming co-breadwinners to help the family survive.

The home economics community has a special burden to teach young women how to cope with this new role of homemaker and breadwinner. Pressures from this new role indicate a new social problem: the run-away-mother.

Ten years ago, there were 300 run-away-fathers for every run-away-mother

The latest available figures show that in 1973 the ratio had changed from 300 to one to 14 to one.

This shocking statistic indicates how serious the problem of the dual role on women has become, and is compelling reason for vocational researchers to meet the challenge, both in preparing the women for undertaking the dual role, and also in preparing men for helping to lift some of the burdens which women have traditionally borne alone.

Add to this another serious social problem -- child abuse -- and you readily see the enormity of the challenge.

Home ec must also broaden its services to male students to prepare them adequately for the more significant contributions which will be required of them in the new family structure, particularly while the mother of the family is away at work.

Vocational research and development has perhaps its greatest challenge in developing meaningful programs for the disadvantaged and handicapped. The 1968 Amendments require a mandatory set-aside of 15 per cent of federal funds for the disadvantaged and 10 per cent for the handicapped. These have yet to reach their full impact.

Nor can research overlook postsecondary education. The NACVE has recommended a minimum 25 per cent set-aside for post secondary education but in most states, the figure runs substantially higher. Last year, construction began on 527 new community colleges throughout the U.S. It is a reaffirmation of faith in community colleges and their ability to deliver an educational program which meets the needs of young America.

It would be my hope that Congress and local school authorities provide sufficient funds to vastly expand vocational guidance and counselling. In our testimony before both the House and the Senate, NACVE took the position that

vocational funds should be used to train vocational counselors and specifically prohibit use of such funds for training general counselors. The whole key to success for American vocational education lies in effective vocational guidance and counselling.

One of the most urgent areas for research has been described in NACVE's analysis of state plans when it called for a comprehensive data system. All of the states have said in their annual reports that such a data system is absolutely essential. The deficient areas of manpower information, a follow-up system, and general availability of current data, must all be increased and integrated for effective planning and implementation of programs.

Some states are trying to work out these problems through development of statewide management information systems. Some states are receiving supplemental data from their State Department of Employment Security. This appears helpful but it is not by any means a solution to the information gap caused by the data problem.

Across the board, the data problem is crucial to the future of effective vocational education, NACVE reports. Local manpower needs, employment prospects, and conversion of Department of Labor Codes into Office of Education Codes are necessary to provide the proper tools for planning and maintenance of programs.

The challenges to vocational education are endless. It is quite clear that the last fourth of the 20th Century belongs to vocational education. As we commence our own third century as a nation, it is clear that America can no longer treat vocational education as a stepchild if, indeed, we are to compete economically with the rest of the world.

Vocational research and development hold the key to our survival. For anyone to suggest that we should trim research expenditures to meet our present fiscal crunch is a short term answer and a long term mistake.

There are enormous changes occuring in American industry. Vocational education cannot keep pace with these changes without the radar of research. Rapidly changing growth industries, like pharmaceuticals, electronics, computers, and chemicals, are offering great opportunities, but without vocational research, our educational systems cannot keep pace.

No segment of our social fabric has a greater responsibility than education, for, indeed, if educators fail, we all fail.

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